JOURNAL OF OPTIMIZATION THEORY AND APPLICATIONS

Volume 2, 1968

Editor-in-Chief

Angelo Miele
201 Space Science Building
Rice University
Houston, Texas 77001

Associate Editors

B. R. Agins
New York University
New York City, New York 10012

A. V. Balakrishnan
University of California at Los Angeles
Los Angeles, California 90024

L. D. Berkovitz
Purdue University
Lafayette, Indiana 47907

J. V. Breakwell
Stanford University
Stanford, California 94305

L. Cesari
University of Michigan
Ann Arbor, Michigan 48104

R. Conti
University of Florence
Florence, Italy 50134

G. B. Dantzig
Stanford University
Stanford, California 94305

S. E. Dreyfus
University of California at Berkeley
Berkeley, California 94720

T. N. Edelbaum
Analytical Mechanics Associates
Cambridge, Massachusetts 02141

D. R. Fulkerson
The RAND Corporation
Santa Monica, California 90406

H. Halkin
University of California at San Diego
La Jolla, California 92037

M. R. Hestenes
University of California at Los Angeles
Los Angeles, California 90024

Y. C. Ho
Harvard University
Cambridge, Massachusetts 02138

F. J. M. Horn
Rice University
Houston, Texas 77001

R. A. Howard
Stanford University
Stanford, California 94305

R. Jackson
Rice University
Houston, Texas 77001

R. E. Kalaba
The RAND Corporation
Santa Monica, California 90406

H. J. Kelley
Analytical Mechanics Associates
Westbury, New York 11590

D. F. Lawden
University of Aston
Birmingham 4, England

G. Leitmann
University of California at Berkeley
Berkeley, California 94720

C. T. Leondes
University of California at Los Angeles
Los Angeles, California 90024

A. I. Lurie
Polytechnic Institute of Leningrad
Leningrad K-64, USSR

L. S. Pontryagin
USSR Academy of Sciences
Moscow B-333, USSR

W. Prager
University of California at San Diego
La Jolla, California 92037

V. A. Troitskii
Polytechnic Institute of Leningrad
Leningrad K-64, USSR

Journal of Optimization Theory and Applications is published bimonthly by Plenum Publishing Corporation, 227 West 17th Street, New York, N.Y. 10011.

CONTENTS

Vol. 2, No. 1 January 1968

Variational and Optimal Control Problems with Delayed Argument, *D. K. Hughes* 1

Dynamic Programming and the Hamilton-Jacobi Method of Classical Mechanics, *S. E. Dreyfus* 15

Optimal Use of Mixed Catalysts for Two Successive Chemical Reactions, *R. Jackson* 27

Optimum Constrained Disorbit by Multiple Impulses, *A. Busemann and N. X. Vinh* 40

Restricted Variational Principle Method for Problems of Low Density Aerodynamics, *C. R. Ortloff* 65

On the Product of the Powers of Several Integrals, *A. Miele* 81

Book Reviews 83

Vol. 2, No. 2 March 1968

An Embedding Theorem for Differential Equations, *M. R. Hestenes and T. Guinn* 87

System Indentification from Noise-Corrupted Measurements, *J. K. Holmes* 102

Approximate Pseudoinverse Solutions to Ill-Conditioned Linear Systems, *A. Klinger* 117

A Structure for the Bayes Analysis of the Performance of Detection Systems with Multiple Sensors and Sites, *D. Middleton* 125

Minimizing the Natural Fuel Requirement for Nuclear Reactor Power Systems: A Nonstandard Optimal Control Problem, *P. Nelson, Jr., and G. Young* 138

Book Review 155

Vol. 2, No. 3 May 1968

Cauchy and Fredholm Methods for Euler Equations, *H. H. Kagiwada, R. E. Kalaba, A. Schumitzky, and R. Sridhar* 157

Continuation in Quasilinearization, *S. M. Roberts, J. S. Shipman, and C. V. Roth* 164
Minimum-Weight Design with Piecewise Constant Specific Stiffness, *C. Y. Sheu and W. Prager* 179
Restricted Variational Principle Method for the Free Molecular Mixing of Parallel Streams, *C. R. Ortloff* 187
Time-Optimal Controls of the Equation of Evolution in a Separable and Reflexive Banach Space, *J. K. Cole* 199
Book Reviews 205

Vol. 2, No. 4 July 1968

Properties of the Conjugate Gradient and Davidon Methods, *G. E. Myers* 209
A Simple Differential Game, *G. Leitmann* 220
An Integral Equation and a Representation for a Green's Function, *H. H. Kagiwada, R. E. Kalaba, A. Schumitzky, and R. Sridhar* 226
Functional Analytic Analysis of a Pursuit Problem, *R. Chattopadhyay* . 230
Optimization of Chemical Reactors with Respect to Flow Configuration, *R. Jackson* 240
Method of Particular Solutions for Linear, Two-Point Boundary-Value Problems, *A. Miele* 260
Book Review 274

Vol. 2, No. 5 September 1968

Time-Optimal Solution of a Linear Evolution Equation in Banach Spaces, *R. Conti* 277
Sufficiency Theorems for Optimal Control, *G. Leitmann* 285
Boundary Arcs for a Class of Differential Games, *T. Guinn* 293
Extensions in Quasilinearization Techniques for Optimal Control, *C. T. Leondes and G. Paine* 316
On Optimal Stochastic Midcourse Guidance, *A. H. Jazwinski* 331
Variational Approach to Conical Bodies Having Maximum Lift-to-Drag Ratio at Hypersonic Speeds, *H. Y. Huang* 348
Book Notices 363

Vol. 2, No. 6 November 1968

A Simple Optimal Control Problem Involving Approximation by Monotone Functions, *W. T. Reid* 365

Derivation and Validation of an Initial-Value Method for Certain Nonlinear Two-Point Boundary-Value Problems, *H. H. Kagiwada and R. E. Kalaba* 378

Maximum Likelihood Recursive Nonlinear Filtering, *R. E. Mortensen* . 386

Computational Results for Extensions in Quasilinearization Techniques for Optimal Control, *C. T. Leondes and G. Paine* 395

New Second-Order and First-Order Algorithms for Determining Optimal Control: A Differential Dynamic Programming Approach, *D. H. Jacobson* 411

An Application of the Theorem of Relaxed Control to the Problem of Increasing Catalyst Selectivity, *F. J. M. Horn and J. E. Bailey* 441

Use of the Method of Particular Solutions in Nonlinear, Two-Point Boundary-Value Problems, *J. C. Heideman* 450

Book Notices 463

Book Review 464

Subject Index to Volume 2 465

Author Index to Volume 2 466